

**REMARKS**

Claims 1-14 are pending.

In Paragraph No. 3 of the Action, claims 1-10, 13 and 14 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Nishiyama et al (U.S. 6,537,718).

Applicants submit that this rejection should be withdrawn because Nishiyama et al does not disclose or render obvious the positive resist composition of the present invention.

With the Response filed November 21, 2006, Applicants submitted a Supplemental Declaration under 37 C.F.R. § 1.132 of Mr. Koji Shirakawa, the first-named inventor of the present application.

The Examiner states that Mr. Shirakawa's Supplemental Declaration was carefully considered but was found to be unpersuasive. Per the Examiner, the Declaration states that making a rectangular profile is a significant effect because deterioration in device performance may occur due to a tapered profile shape. The Examiner agrees, but notes that Mr. Shirakawa's previous Declaration merely records the pattern profile results as "slight taper" versus "rectangle," which are relative terms without any actual measurement of the degree of taper. The Examiner asks: By "rectangle," does Mr. Shirakawa mean exactly 90°? She also asks: By "slight taper," does Mr. Shirakawa mean 89.9° or 80° or 70°? The Examiner states that in order to evaluate whether the difference in terms of pattern profile between the present invention and Nishiyama is significant, one first needs to know what exactly the degree of difference is.

Also, the Examiner states, it is not clear from the previous Declaration what the resin B-5' and resin B-5" exactly are. The Examiner notes that the Declaration simply says that those resins were prepared respectively based on the working Examples of the present invention, but it

never defines or shows the structure of those resins. Thus, the Examiner says, there is no way of knowing whether the comparison made was legitimate.

For these reasons, the Examiner states, the §103(a) rejection based on Nishiyama et al '718 still stands.

In response, Applicants submit herewith a second Supplemental Declaration under 37 C.F.R. § 1.132 of Mr. Shirakawa.

Mr. Shirakawa's present Declaration provides more quantitative information relative to the pattern profiles. See pages 2-3 of his Declaration. As Mr. Shirakawa explains, the evaluations in his initial Declaration fall within the following definitions:

Rectangular profile: beyond 87.5° to 90.0° or less.

Slight taper profile: beyond 85.0° to 87.5° or less.

Taper profile: 85° or less.

Referring to Mr. Shirakawa's initial Declaration, Examples 1 and 2 embodying the present invention had a rectangular pattern profile. Thus, the angle  $\theta$  of the cross-section of these profiles would be beyond 87.5° to 90.0° or less, as stated in Mr. Shirakawa's present Declaration. Comparative Example 1' in Mr. Shirakawa's initial Declaration corresponds to Example 9 of Nishiyama et al '718. This resist had a slightly tapered pattern profile. As explained in Mr. Shirakawa's present Declaration, the angle  $\theta$  of the cross-section of this slightly tapered profile would be beyond 85.0° to 87.5° or less.

The rectangular profile obtained with the resist of the present invention is superior to the slightly tapered profile obtained with the resist composition of Nishiyama et al '718.

The Examiner will also kindly note that the resist composition of the present invention provides superior results relative to Nishiyama et al with respect to sensitivity, resolution, and

invacuo PEB properties, in addition to superior results in terms of the pattern profile. See Mr. Shirakawa's initial Declaration.

Mr. Shirakawa's present Declaration also provides additional information on the specific structure of the resins B-5' and B-5''. In this regard, the Examiner will kindly refer to the explanation of the structures of the resins B-5' and B-5'' at pages 3-4 of Mr. Shirakawa's present Declaration. As he explains, resin B-5' and resin B-5'' were prepared by changing only the weight average molecular weight of resin B-5 from Example 9 of Nishiyama et al. The structure of resin B-5 is the formula (IV-43) of Nishiyama et al. Because resin B-5' and resin B-5'' were made by changing the base resin of Nishiyama et al (using base resins having weight average molecular weights Mw of 2500 and 4000 in place of the base resin having an Mw of 17,000, respectively), the structures of resins B-5' and B-5'' are the same as the formula (IV-43) of Nishiyama et al.

Mr. Shirakawa also clarifies a statement made in his initial Declaration pertaining to this point. That is, his initial Declaration incorrectly indicated that resins B-5' and B-5'' were prepared "based on the working examples of the present invention." As Mr. Shirakawa clarifies in his present Declaration, the resins B-5' and B-5'' were prepared as described in his initial Declaration and in his present Supplemental Declaration, and not based on the working examples of the present application. Applicants sincerely regret any confusion this may have caused.

In view of this supplemental explanation of the structures of resins B-5' and B-5'', it is respectfully submitted that the comparison made to Nishiyama et al in Mr. Shirakawa's initial Declaration was a proper comparison of the closest embodiments of the present invention to the closest prior art, namely, Example 9 of Nishiyama et al.

In view of the above, the Examiner is kindly requested to reconsider the evidence of patentability and to withdraw the §103 rejection of claims 1-10, 13 and 14 based on Nishiyama et al '718.

In Paragraph No. 4 of the Action, claims 11 and 12 are objected to as being dependent upon a rejected base claim. Claims 11 and 12 are indicated to be allowable if rewritten in independent form.


Applicants respectfully submit that claims 11 and 12 are allowable in their present form, in view of the above response to the §103 rejection of claims 1-10, 13 and 14 based on Nishiyama et al '718.

Allowance is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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